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CRAIG, R. B. (2)

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THE REA LINEMAN

Rural Electrification Administration

U. S. Department of Agriculture

Vol. II, No. 2

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Washington, D. C.

ONLY ONE FATAL ACCIDENT SINCE 1797

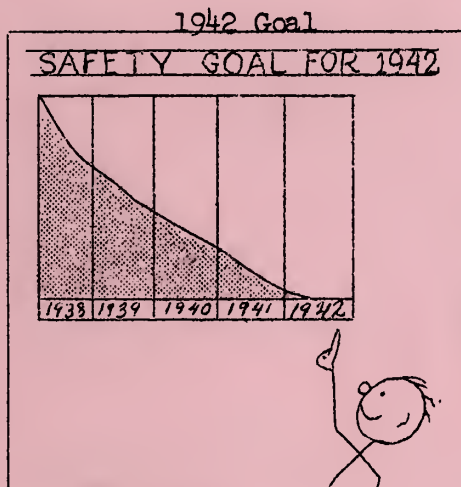
If your co-op had been in existence approximately 20 years after the original 13 colonies began their fight for independence, you should have had only one fatal or permanently disabling accident if you were average, and had 15 employees in your system.

If your system had 15 employees, and had a fatal accident, you would have had to work until the year 2226 before you could have another such accident if you were to remain average.

This is another way of saying that the frequency rate of fatal or disabling accidents for "all public utilities" is 0.23. Another way of putting it is that a co-op system, having 15 employees, would have, to be average, only one fatal or permanently disabling accident every 145 years.

Many things have happened since 1797. And a

(Turn to 1797, page 5)



REGION I LINES UP FOR YEAR OF SAFETY

We have a copy of the letter Ernest W. Hover, Operations Engineer for Region I, sent to all the operating cooperatives in his region. The letter also served to transmit the "on your mark chart," with the "hope that the little man representing Region I will make a good showing in this year's safety competition."

We have not yet heard from the other regional operating engineers, but do not doubt that they too have already lined up for safety.

STOPPED FAN NOT SAFE WAY TO TEST LINE

(Discussion Case No. 3)

Following is the third of a series of descriptions of accidents and how to prevent them. It is suggested that these accidents be discussed at your Safety Meetings and that you forward any comments or criticisms you may have to the editor.

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A report forwarded to the REA reads:

"A lineman and a groundman were on a road construction job where a contractor was blasting. One of the blasts resulted in the cap wire lodging in contact with the phase wire and neutral of a single phase line. There was a slight flash but no indication of a short.

"The lineman assumed therefore, that the line was dead. But to make a further check, he went into a nearby farmhouse and turned on the fan. The fan did not start running.

(Turn to Fan, page 6)



SAFETY WORK
BY REA PRAISED
AT CONFERENCE

Accident prevention work undertaken by the Rural Electrification Administration came in for praise at the National Home and Farm Safety Conference sponsored by the National Safety Council held in Chicago recently.

Work of the REA was spoken of in the address by Col. John Stilwell, president of the National Safety Council. "One of the most encouraging developments in the home and farm safety program has been the increasing recognition of the importance of the subject by governmental organizations. I have in mind the fine and extensive safety work of the various divisions in the Department of Agriculture, the Department of the Interior, the Department of Labor, the Bureau of Standards, and the Bureau of the Census, and the ever-increasing interests of the officials and the governmental departments of the 48 states."

"I could point to numerous specific activities," Col. Stilwell went on, and then mentioned the safety training work undertaken by the Rural Electrification Administration.

Mr. Stilwell cited the fact that there are 37,500 deaths and over five million injuries annually in home and farm accidents. "We must find ways of taking safety to our farm families so they may live and produce and enjoy the fruits

W A T C H F O R
OPERATIONS MEMORANDUM 22.3

of their work without needless suffering." Col. Stilwell pointed out the added responsibilities which the war has placed upon the Nation to avert accidents. "Our boys in uniform on the many fronts are depending on us to keep them supplied with food, clothing and implements of war. Accidents which hinder production may sacrifice their lives." The speaker brought out that home and farm accidents, like others, "are no respecter of purse or person," and added, "We have a job ahead of us which has to do with people of all ages and in all stations of life."

Col. Stilwell said that thirty years of experience have taught that the well-rounded program of safety work includes use of three forces: Education, Engineering and enforcement. "Education and engineering," he pointed out, "will have the greatest bearing on home and farm accidents."

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REA LINEMAN EDITOR
ON SAFETY COMMITTEE

David A. Fleming, editor of the REA LINEMAN, was appointed to the Farm Equipment and Engineering Section at the First National Home and Farm Safety Conference held at Chicago February 17 and 18. The sectional committee was one of five into which the work of the conference was divided. The section will continue to serve until a formal organization is perfected.

STUDY OF ACCIDENTS
Tells When They Occur

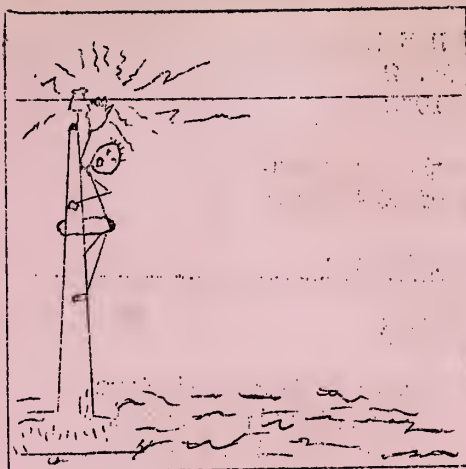
In a recent issue of the MONTHLY LABOR REVIEW, of the Bureau of Labor Statistics, U. S. Department of Labor, a study was given of the accident experience of 26 selected iron and steel plants.

Detailed information regarding the time of occurrence of 1,273 injury cases shows that plant injuries were relatively most frequent in the first working hour; declined successively in the second, third, fourth and fifth hours; increased very slightly in the sixth hour; and declined in the eighth hour.

Variations in the experience of the different shifts, however, were more striking. On the day shift, injuries reached their peak frequency in the second hour and then declined relatively through the sixth hour, rising to a second minor peak in the seventh hour. On the evening shift, the first hour showed a decided peak, after which the relative frequency leveled off until the eighth hour, when it again declined. On the night shift, there were two definite injury peaks; the first (and greater) of these came in the first hour and the second came in the sixth hour. (From NATIONAL SAFETY NEWS)

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**GLOVES ALONE
NOT REGARDED
FULL PROTECTION**



The following table shows the value of the different classes of gloves:

Class A Glove

10,000 v.	16,000 v.
3 minutes	1 minute
leakage current	leakage current less
less than 10 milliamperes	than 18 milliamperes

Question and Answer Column

The letter below, addressed to Mr. David A. Fleming, Safety Director, and the answer to it, will be of interest to all linemen in that it tells precisely what dependence it is safe to place in linemen's rubber gloves:

"We recently forwarded to the White Rubber Company of Ravenna, Ohio, 5 pair of linemen's gloves to be tested. When new, these gloves were purchased for 20,000 volts rating.

"They were returned to us with the following information:

"The leakage on the remaining 10 gloves showed:

	10,000 V	16,000 V
Minimum	5.0	8.0
Maximum	5.4	8.8

"Will you please explain what they mean by leakage 5.0 and 8.0. Is that the voltage leakage? Are these gloves recommended as safe according to ASTM standards?

"Will appreciate any information you are able to give us with respect to this."

Project Superintendent
Pocahontas County
Rural Electric Co-op,
Pocahontas, Iowa

The answer that was sent follows:

"The full title of the ASTM standard is the 'A.S.T.M. Standard Specifications for Rubber Gloves for Electrical Workers on Apparatus or Circuits Not Exceeding 3,000 Volts to Ground.' These gloves are to be used on voltages

less than 3000 volts to ground. We know of no rubber protective device which in itself is recommended by safety authorities to be used on voltages exceeding 3,000 volts to ground.

"In order to be sure that these gloves are safe to be used on such voltages, it is necessary to test the gloves on a higher voltage. This allows for a factor of safety. How great this factor should be is a matter of controversy, and many elements enter into it. But this accounts for the term '10,000 and 20,000 volt gloves.' You must consider that as a testing voltage only.

"Even if the gloves withstand a 10,000 or 20,000 volt test, it has little significance unless the type of electricity (AC or DC), length of time the gloves withstood the voltage and the amount of 'leakage current' are known. The ASTM has determined what these factors should be in order to be reasonably sure the gloves are safe.

"To sum it up, then, the ASTM specifies that a glove, to be safe for work on circuits of less than 3,000 volts, must be able to withstand higher voltage for a specified length of time, with a current leakage not to exceed a certain amount.

"If you are interested in going into this subject fully, Safe Practice Pamphlet No. P.U. 3, issued by the National Safety Council, explains the testing procedure in detail.

"For a practical rule of thumb, you may consider that no rubber glove, in itself, can be depended upon to protect workers against voltages greater than 3,000 volts to ground.

"In view of this, you may question our recommendation of rubber gloves for use on REA lines. However, under no circumstances do we recommend that gloves alone be used as protection against primary voltages when working on such wires. We do recommend that gloves be worn as protection against secondary voltages, possible leakage current from primaries, and as some protection against inadvertent and momentary contacts with energized primary conductors

Correction

The January issue of THE LINEMAN carried the Vol. and No. incorrectly. It should have read Vol. II, No. 1.

THE REA LINEMAN
Vol. II, No. 2
February, 1942

Published Monthly in the Interest of
Safety for Employees of REA Systems

David A. Fleming, Editor

NO SAFETY IN HOMES

Few who attended the National Home and Farm Safety Conference in Chicago could help being impressed with both the figures of accidents on the farm that the conference revealed and with the essentialness of the work in preventing them. Thirty-seven thousand deaths and five million injuries on farms and in homes annually is so tremendous a social and economic loss that nothing should be left undone that could possibly mitigate it. To this work the REA can well lend substantial assistance. With its more than eight hundred system co-ops, REA already has an organization that can step into the field with every device of education and promotion to reduce this ghastly number of accidents, and make both the home and farm the places of safety that people sometimes think they are, and that they really ought to be.

This safety campaign, right now during our period of war, as one speaker pointed out, takes on even added importance. It becomes a war essential that home and farm accidents be averted, or many a boy fighting at the front will have his burden increased. Man power is an essential element of any war, and man power is what these accidents destroy. It is now plainly patriotic to avoid accidents, so that the sum total of America's power in this war be in no way diminished.

TWENTY-FOUR-HOUR A DAY JOB

There was a splendid thought brought forth in the address of Col. Stilwell, president of the National Safety Council, at the National Farm and Home Safety Conference. He said that accidents away from work are just as destructive of man power as those occurring in the industries. This is a fact deserving more thought than it gets. A man hurt, or perchance killed, when off the job, will not by his injury or his death affect the safety standing of the industry by which he is employed. But in a day when man power means so much to the great objectives of winning a war, a man lost is a man lost, no matter where the loss occurred. REA linemen ought to take that close to heart. Not only must they avert accidents on the pole, but on the highway, in his home, and everywhere else. Safety is something to be practiced twenty-four hours a day, and every day.

MAN POWER LOSS

(These accidents were reported to REA during December)

Dead: (REA System Employees)

Kenneth F. Harbaugh -
Pa. 24 Bedford

John Neighbors
Mo. 46 Tancy

Disabled: (REA System Employees)

C. Shofner
Miss. 34 LeFlora
Injury unknown

H. Van Wyngarden
Iowa 40 Marion
Bruised arm

O. Mansfield - Idaho 10
Nez Perce
Electric shock and burns

G. Scott - Mont. 10 Missoula - Electric shock, burns on hands and feet

W. F. Dixon
Wash. 32 Oregon
Fractured knee cap and arm

Disabled: Contractor
(Not REA System)

Harry R. Byers, Inc., N. C.
F. A. Unger, strain

W. C. Franks, mashed and cut forefinger

H. T. Ratteree, burned eyes (welding)

Day & Zimmermann, Inc., Md.

D. Herring, bruised ankles

R. Johnson, strained back muscles

G. Thomas, splinter in hand

R. E. Barnes, strained back muscles

Harold & Le Page, Inc., Mich.

F. Johnson, head injury

E. French, contusion of neck, chest and back

Sandberg & Johnson Constr. Company, Texas

L. Lansdale, cut leg

M. Denton, cut off little toe

G. Wick, cut leg

N. Sandford, cut foot

1797

(Continued from Page 1)

great many things will happen before the year 2226. For one, the life-span of the individual has greatly increased. To cite figures for an individual co-op which would be comparable to the average lifespan, it would be necessary to increase the number of your employees. If you had 30 employees, you would have one fatal accident every 73 years, and if you had 60 employees, one fatal accident every 36 years, if you were to be average.

As co-op employees probably will not increase to that extent, we must ask other co-ops which do not have fatal accidents "to help carry the load." If all co-ops averaged 15 employees, and you had a fatal accident, 142 other systems must go an entire year without a fatal accident to compensate for your accident.

Bringing that down to date, to compensate for the fatal accidents that occurred to system employees during 1941 alone, no fatal accident should occur to any REA system employee until 1945.

The frequency of all fatal and disabling accidents in public utilities is 12.15. To attain this record an organization of 15 employees may suffer only one injury during nearly three years of work.

But many organizations do better. Fall River Electric Light Company of Fall River, Mass., set a new high mark of

4,337,640 injury-free man hours. The record began June 18, 1930, and ended on January 9, 1940.

The frequency rates of 0.23 and 12.15, as well as the record of Fall River are from the "1940 Accident Rates in Public Utility Industries" published by the National Safety Council, Inc.

By the way, only those injuries which result in lost time other than on the day or shift in which the injury occurs, are included in the compilation of injury rates.

The formulas are:

Frequency rate =

$$\frac{\text{No. of Injuries} \times 1,000,000}{\text{No. of man-hours of exposure}}$$

 Severity rate =

$$\frac{\text{Total time charges in days} \times 1,000}{\text{No. of man-hours of exposure}}$$

First Aider McKee

"First Aid McKee I was known as in those days: First Aid McKee; that familiar figure on federal forfeitures, fixing fearfully flattened fingers with facility and finesse, fanning the fevered faces of friends and foes and referring to faithful and fearless physicians' frightful fractures of fragile fibulas all the way from the fluorescent factories of Flatbush to the flying fields of---

Say, Why Don't you Be Careful and Not Get Hurt?"

(From the CARIBBEAN
 CORSAIR)

Bonds or bondage? Buy
 U. S. Savings Bonds.

THE REA LINEMAN DOES ITS WORK

The following letter from the Rock County Co-op was good to read. Of course, we welcomed the good wishes for The REA Lineman, but more especially the report of the fine record of line crew and the frank praise extended to it:

"To the Editor:

"The REA LINEMAN for January, which marks its 10th issue, certainly shows what 10 months of safety advertising has done, and all read it from cover to cover.

"We admire the fine showing that the Texas Co-op has made, and their record makes us feel even better about our own record. January 31, 1942, marked 784 days of continuous operation without a lost time accident hour, and only one sprained back broke a 53-month record.

"Our entire maintenance crew and myself hold Red Cross First Aid Certificates and we have been requested to take the Instructors Course starting March 1, 1942, as a result of the above average standing we received.

"Our force deserves additional praise because our linecrew of 2 linemen and 2 groundmen have, without assistance, extended service to nearly 200 farms in the last 24 months.

"We belong to the National Safety Council and abide by all safety suggestions.

"Service with safety adds profit to business. You have our best

wishes for the continued success of the REA LINEMAN.

C. H. Foster, Manager
 ROCK COUNTY ELEC. COOP.
 ASSN."

FAN

(Continued from Page 1)

which further "proved" to the lineman that the current was off. However, when he climbed the A-4 corner pole to open the jumper, the line proved to be still energized. And the lineman was killed.

The groundman's statement of the accident reports that as the lineman reached the top of the pole he slapped the wire with his canvas leather-faced glove. He then said, "Yes, the line is dead, all right."

The report further states that the lineman had with him all the necessary safety equipment, such as a hot stick, rubber gloves and grounding device, but apparently was so convinced that the line was de-energized that he made no use of any of them.

The outstanding factors are:

1. Shot wire was not weighted to prevent any possibility of it being blown into the primary wires.

2. Inadequate checks were made to determine if the line was de-energized.

3. No rubber gloves were worn.

4. Lineman had less than $2\frac{1}{2}$ years experience.

Questions:

1. Do you consider that every primary is energized if you cannot see protective grounds on it?

2. Do you always wear rubber gloves if

the line is not positively grounded?

3. Do you keep linemen of less than $2\frac{1}{2}$ years' experience from working on energized primaries if a more experienced lineman is not supervising him?

4. Do you advise contractors to weight their shot wires so that they cannot be blown into primaries?

5. Have you noticed the similarity of discussion cases Nos. 1, 2 and 3?

6. Are you taking steps not to let it happen on your system?

The answers would always be Yes.

NO BIG ACCIDENT DURING ALL 1941

To The Editor:

"This is to tell you that we have received a copy of Safe Practices To Be Followed by Contractors During Construction and Energizing Procedure to be followed by System Lineman. We have referred same to our lineman and are following contents of these forms fully in energizing the 125 miles of "B" Sections which are being completed during February.

"We operated during 1941 with a force of eight employees without a single major accident and we are doing our utmost to repeat this record during 1942.

L. L. Alexander

Project Superintendent

SOUTHWEST ELECTRIC CO-OP."

Billions for Allied victory . . . or for tribute to dictators? There is only one answer: Buy U. S. Defense Bonds and Stamps.

MAKING SAFETY SUGGESTIONS

Any suggestions you may wish to make for the safety of yourself or your fellow workers will be most welcome.

Make your suggestions practical. Think them through. Study them carefully yourself before you submit them. Imagine yourself in the position of your superior and ask yourself these questions: Are these ideas really practical--will they work? Can the company afford to spend the amount of money necessary to put them into effect immediately?

To suggest the first thing that comes to mind regardless of whether it is practical or not is a good way to take a chance of getting a discouraging response.

Always remember that a delay in putting a practical suggestion into effect is not always a sign that your efforts may not have been appreciated. There are sometimes very good reasons why the work cannot be undertaken immediately.

Safety Instruction Card
No. 109

(From the National
Safety Council)

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Safety Bulletin No. 9 has been revised and replaced by Operations Memorandum No. 22.2. Have you studied it?

LINEMAN MAY
WRITE OWN
SAFE PRACTICES

SHORT STORIES WITH MORALS
(Draw your own)

should have been on the job. One man slipped, the log turned, catching the other man's arm and bruising it severely.

6. Hanging a transformer was completed except for attaching the primary lead. When this lead was sent up, the lineman, with 14 years' experience, got one end of it too close to a primary, either hitting it or drawing an arc. Rubber gloves were not worn because the job was not considered hot line work.

7. A line crew of two men were patrolling, trying to locate a source of radio interference. As the line ran partly on privately owned right-of-way, the men separated to expedite the work, each walking a portion. When the second-class lineman did not show up at the meeting place, the head lineman went in search of him. His body was found at the foot of a transformer pole. No burns were apparent on the body. His safety strap was not around the pole but he had evidently fallen from the pole. Some voiced an opinion that dizziness or heart attack caused the fall although his health apparently had been good.

8. A farmer was found at the foot of a pole suffering from severe injuries. A homemade ladder was against the pole; the cut-out door was lying on the transformer. It was assumed he attempted to restore service and was thrown from the pole by shock or arc.

We should like to get out a publication for linemen written by the linemen themselves. It ought to make a valuable compilation. It will have the worth of actual experiences of linemen told in the linemen's own words to avert injury and save lives of other linemen.

The plan of getting up the publication would be something like this: Every lineman who witnesses an accident, and knows how it might be averted, should write it in to the editor. Every lineman who sees a possibility of an accident, and can give a warning how to avert it, should also send it in. Every lineman who sees a possible safe practice that is not usually followed, should write that in. Every item that tends to make the work of the lineman less hazardous should be written in.

Write it in your own words. Write it in pencil, ink, or in any other manner. Don't worry about how to phrase it. It will be taken care of after the letter is received. But be sure to add your name and the system to which you are attached. Credit will be scrupulously given to every suggestion.

When a sufficient number of suggestions have been received, they will be put into a mimeographed pamphlet, with the writer's name at the head of each item printed.

1. A man was electrocuted while blasting under a single-phase line. The shot-wire was blown into the phase-wire and the current entered the man's body through his hands on the battery and switch. It is not known how the shot-wire, in its upward flight, missed the neutral and hit the phase-wire. Definite instructions to weight the shot-wire near power lines were not heeded. In the future, blasting operators will also wear rubber gloves.

2. A serviceman, driving a truck at night, ran into and practically demolished a tractor. The serviceman, in the hospital, said he did not see the tractor until too late to avoid the collision.

3. A lineman was severely injured in a fall from a pole. He was climbing with one hand and his safety strap around the pole. He was holding three service wires in his other hand. Somehow the strap came loose.

4. A line crew was changing a transformer bank from single to two bushings. When the work was nearly completed, one lineman removed his rubber gloves, then hit a wire. A fellow worker applied resuscitation and saved his life.

5. Two men were rolling a log up a slope (clearing highway) although four men

Every item that has any value whatever will be used. It will be the linemen's own publication, written by the linemen for the linemen.

So start in now. Send your items. And see your name as joint author of a permanent compilation of great value in averting injury and in saving life.

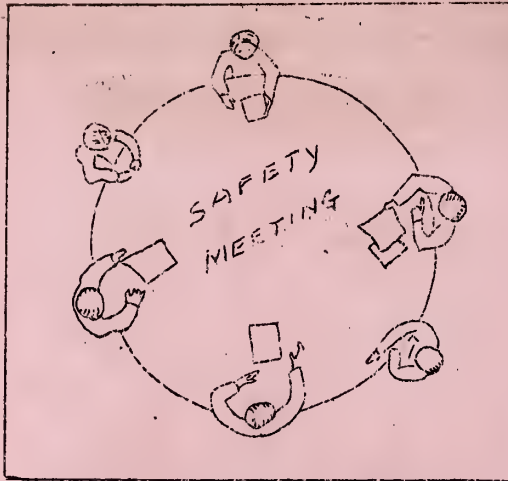
SIX COOPERATIVES UNITE TO HOLD SAFETY MEETING

Since last August the Kiwash Electric Cooperative, Inc., at Cordell, Okla., has been holding weekly safety meetings every Monday morning. To stimulate among neighboring projects interest in a good safety program an invitation was extended to the five other cooperatives in the area to hold a joint meeting. A program was prepared in which each project was given a definite part.

The meeting was so successful that it was decided to set up a safety organization. It was named The Southwest Cooperative Safety Association. Each of the six cooperatives are now holding weekly meetings and send to the other five a copy of the minutes of that meeting. The Association will meet bi-monthly, each cooperative taking its turn in sponsoring the meeting.

At the first joint meeting, Frank Parmon, First Aid instructor, gave a talk and demonstration on the subject "What To Do in Case of a Broken Leg," using a traction splint and then a hoe handle and bandages in the demonstration. A 12-minute movie was shown illustrating the use of the tourniquet.

Cecil Neely also gave a talk on "Working in a Mechanical Manner," bringing out especially points of interest for linemen. Maintenance of trucks and preservation of tires also was discussed, the matter being



of special interest right now because of the shortage due to the war.

H. M. Green spoke on the maintenance and care of safety equipment, emphasizing particularly the care of rubber gloves, hot stick and other equipment. Artificial respiration was demonstrated by Hank Stevens. A tool inspection was made of the personal tools of linemen.

An interesting phase of the program was the actual framing of a dead end pole (A5) by the Harmon Cooperative. The conductor had been strung across a hot wire crossing. It served to bring out the specifications and safety factors in the work. Specifications and safety precautions were brought out in a demonstration by the Southwest Cooperative, in making a complete transformer setting on an A-5 dead end pole. Howard Hembre, REA field engineer, inspected the demonstrations and gave constructive criticism.

A luncheon was provided for those attending the meeting by the board of trustees of the Kiwash Cooperative.

Raymond Clay, line foreman of the Cotton Electric Cooperative of Walter, Okla., was elected president of the association. Neely of the Kiwash was elected secretary. The other cooperatives in the association are: The Southwest Rural Electric.

NO ACCIDENT AWARDS FOR SECOND YEAR

For the second successive year No Accident Honor Award pins were distributed to employees of the Menard Electric Cooperative, Petersburg, Ill. A. E. Becker is manager of the co-op. It is affiliated with the National Safety Council.

The awards were made at a dinner at which L. C. Groat, chairman of the Illinois REA Safety and Job Training Committee was guest speaker. Mr. Groat complimented Mr. Becker and also B. F. Shively, instructor for the Illinois REA Safety and Job Training program, as pioneers in a work that is rapidly being followed throughout REA systems in the country.

Albert Hinrichs, line foreman of the Menard Co-op, also is a member of the committee to assist the county Red Cross chairman in the First Aid program. Hinrichs is chairman of all highway and mobile emergency units in the county.

Cooperative at Tipton, Okla., Harmon Electric Cooperative at Hollis, Okla., the North Fork Electric Cooperative, Sayre, Okla., and the Caddo Electric Cooperative at Bingor, Okla.

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Have you completed your First Aid Course? Send in your name; we still have a supply of "Until the Doctor Comes."